FD-250B

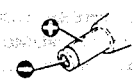
SERVICE MANUAL

UK Model

SPECIFICATIONS

TV standard	British TV standard
Channel Coverage	UHF channels 21 – 68
Aerial	UHF telescopic aerial
Picture tube	2.7-inch picture measured diagonally
Input	A/V IN : stereo minijack Impedance Audio approx. 47 kilohms Video 75 ohms
Output	EAR : minijack Impedance 8 – 300 ohms
Power requirements	6V DC See "Power Sources".
Battery life	See "Power Sources".
Dimensions	Approx. 106 × 185.5 × 51.8 mm (4¼ × 7⅜ × 2⅛ inches) excl. projecting parts and controls
Weight	Approx. 540g (19 oz) incl. batteries

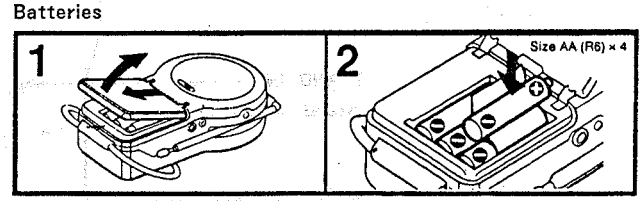
Note : Use only the recommended AC power adaptor or car battery cord manufactured by Sony.
Polarity of the plugs of other manufacturers may be different.



Polarity of the Sony plug

Power Sources

Batteries



Note : The use of alkaline batteries are recommended.

House Current (240V AC)
Connect the AC-D4M AC power adaptor (not supplied) to the DC IN 6V jack.

Car Battery (12V DC)
Connect the DCC-127A car battery cord (not supplied) to the DC IN 6V jack.

External Battery Case
Insert four R14 or LR14 (SIZE C) batteries into EBP-6 external battery case (not supplied) and connect it to the DC IN 6V jack.

Battery life

Batteries	TV mode (Full volume)
Sony alkaline AM3 (N)	4 hours
EBP-6 external case (not supplied) with Sony alkaline AM2 (N)	7 hours

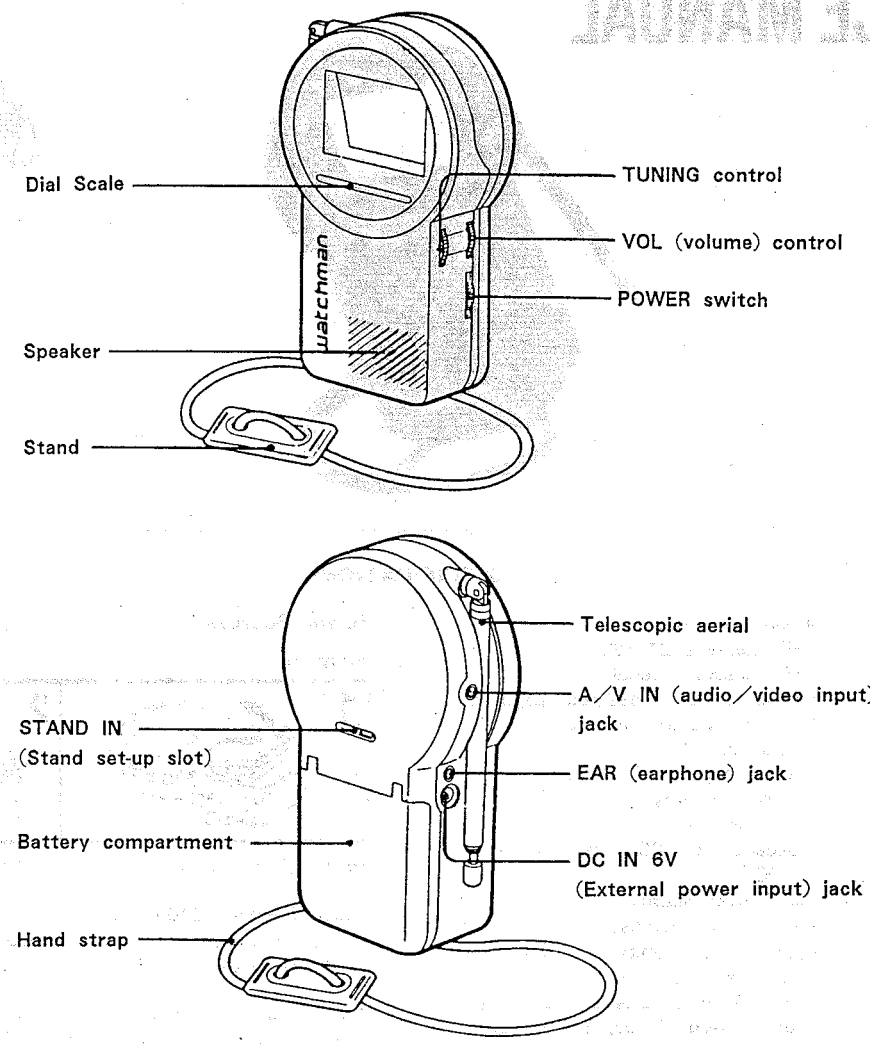
MICROFILM

FLAT BLACK AND WHITE TV

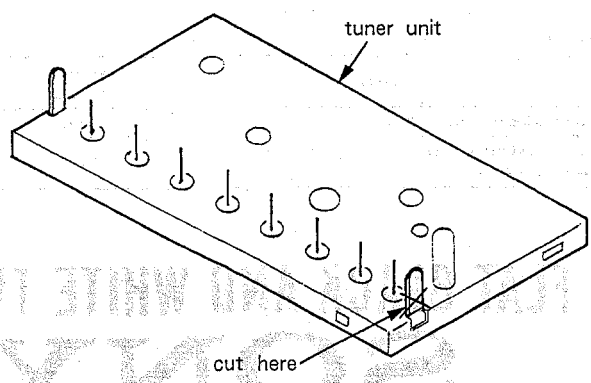
SONY®

SECTION 1
GENERAL

1-1. LOCATION OF CONTROLS



Note : When excharging tuner unit, cut as shown below and install it.



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit boad(within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SECTION 2
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

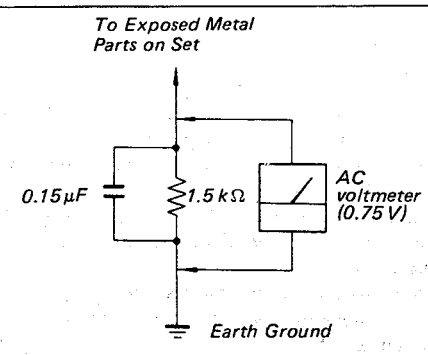


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

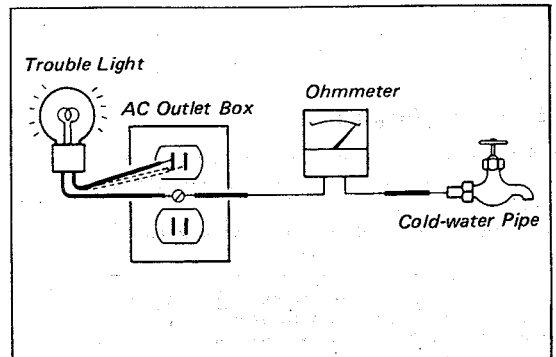


Fig. B. Checking for earth ground.

SECTION 3
ADJUSTMENTS

NOTE

1. Test Equipment Required
   - regulated dc power supply
   - color-bar/pattern generator
   - digital voltmeter
2. Input Signal
   Cross hatch color-bar off-the-air signal.
3. The adjustment should be performed with 6V dc and about 5 minutes warmup unless otherwise noted.
4. Position the set vertically with the front side faced to the north for TV-section adjustments.

4V Adjustment

1. Connect digital voltmeter to TP 4V.
2. Adjust pattern connection C and D for 4.0 ± 0.12V reading on digital voltmeter.

pattern connection		digital voltmeter reading
C	D	
open	short	up
open	open	↕
short	open	down

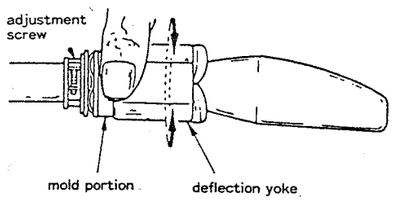
32V Adjustment

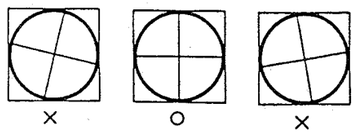
1. Connect digital voltmeter to TP(32V)
2. Adjust RV601 for 32.2 ± 0.1V reading on digital voltmeter.

Horizontal Alignment Adjustment

1. Loosen the adjustment screw.
2. Tune in an off-the-air signal and adjust deflection yoke for optimum picture.
3. Tighten the screw after the adjustment.

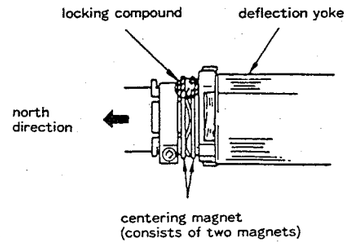
Note: When making the adjustment, turn the deflection yoke while holding the mold portion together with yoke.





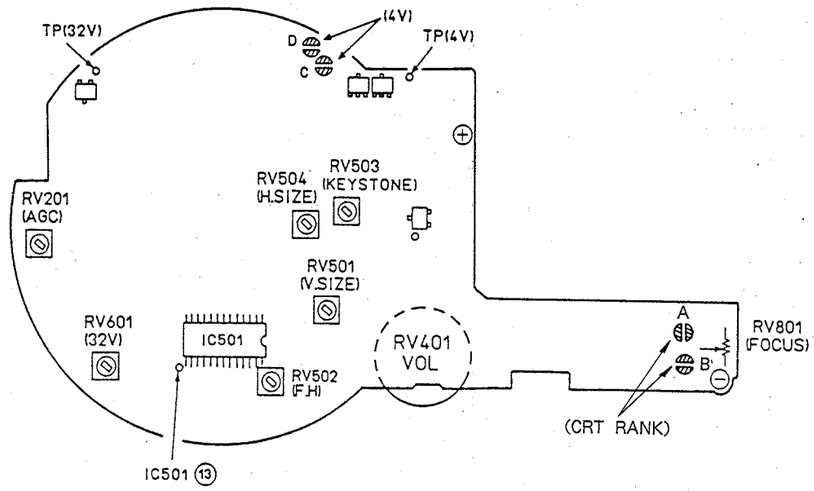
Centering Adjustment

1. Turn the socket of CRT toward the north.
2. Tune in an off-the-air signal.
3. Adjust the centering magnet so that the picture is in the center.



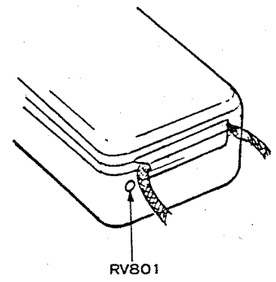
Adjustment Location

—A board— (Conductor Side)



Focus Adjustment

1. Tune in an off-the-air signal.
2. Adjust RV801 for the best focus at the center of the picture.



RF AGC Adjustment

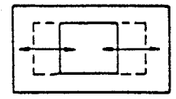
1. Tune in an off-the-air signal.
2. Adjust RV201 so that snow noise disappears from the picture.

Horizontal Frequency Adjustment

1. Connect terminal ⑬ of IC501 to ground.
2. Tune in an off the air signal and adjust RV502 for stable picture.

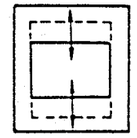
Horizontal Amplitude (H-SIZE) Adjustment

1. Tune in an off-the-air signal.
2. Adjust RV504 for the best horizontal amplitude.



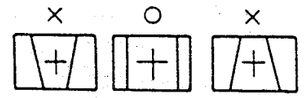
Vertical Amplitude (V-SIZE) Adjustment

1. Tune in an off-the-air signal.
2. Adjust RV501 for the best vertical amplitude.



Keystone Correction (KEYST) Adjustment

1. Tune in an off-the-air signal.
2. Adjust RV503 for the optimum picture.



CRT Rank Adjustment

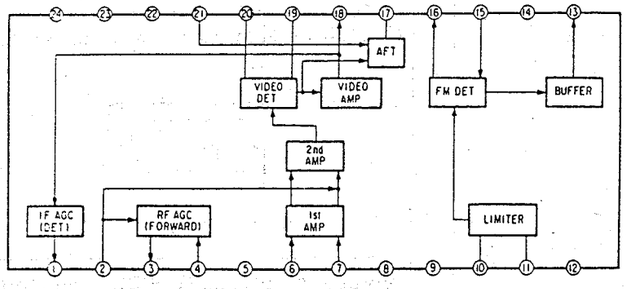
When replacing the CRT, make sure of marking color on neck of CRT and perform this adjustment.

marking color	pattern connection	
	A	B
red no mark	short	open
blue	open	short

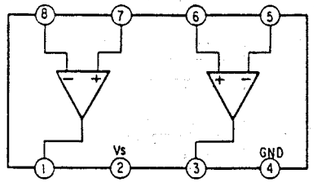
SECTION 4
DIAGRAMS

4-1. IC BLOCK DIAGRAM

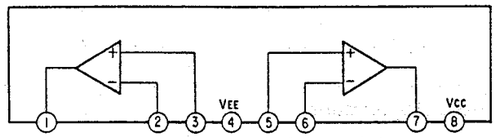
IC201
M51348AFP-72C



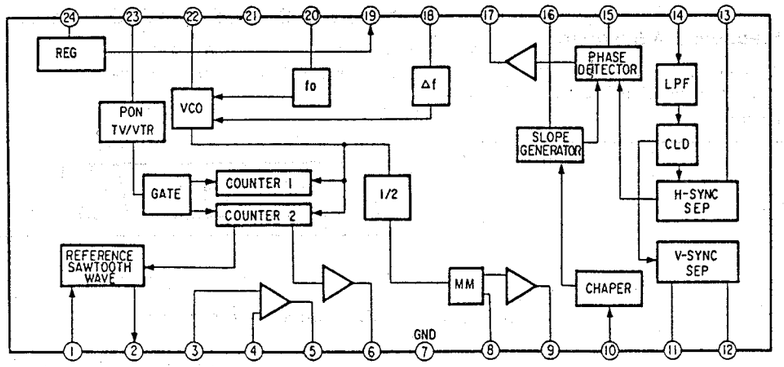
IC401
NJM2073M



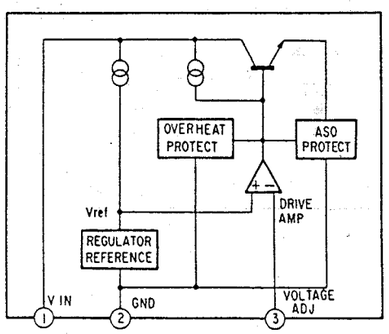
IC502
NJM2904M



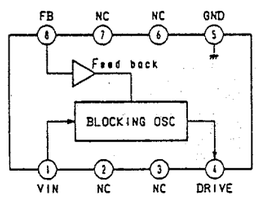
IC501
CXA1188M



IC601
M5236ML



IC602
BA6161F



• Semiconductor Location

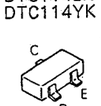
Ref. No.	Location
IC201	E-3
IC401	F-6
IC501	F-4
IC502	D-5
IC601	C-6
IC602	G-3
Q201	D-4
Q202	C-3
Q301	C-3
Q302	E-6
Q501	E-5
Q503	D-5
Q504	E-7
Q506	D-7
Q507	D-7
Q508	E-5
Q601	C-6
Q801	F-8
Q802	F-6
Q803	F-9
Q805	F-7
D201	D-2
D401	F-6
D502	D-6
D601	F-3
D602	C-2
D603	G-4
D801	F-7
D802	F-9

• Note on Printed Wiring Boards

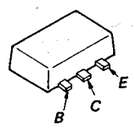
- o—— : parts extracted from the component side.
- •—— : parts extracted from the conductor side.

• Semiconductor Lead Layouts

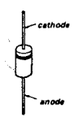
2SA1162
2SC1623-L7
2SC2714-Y
2SC3360
DTC114EK
DTC114YK



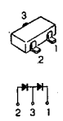
2SB798-DL
2SC3649-S
2SD999-CLCK
2SD1624-T



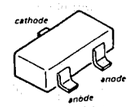
1SS146
1S1585



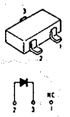
1SS226



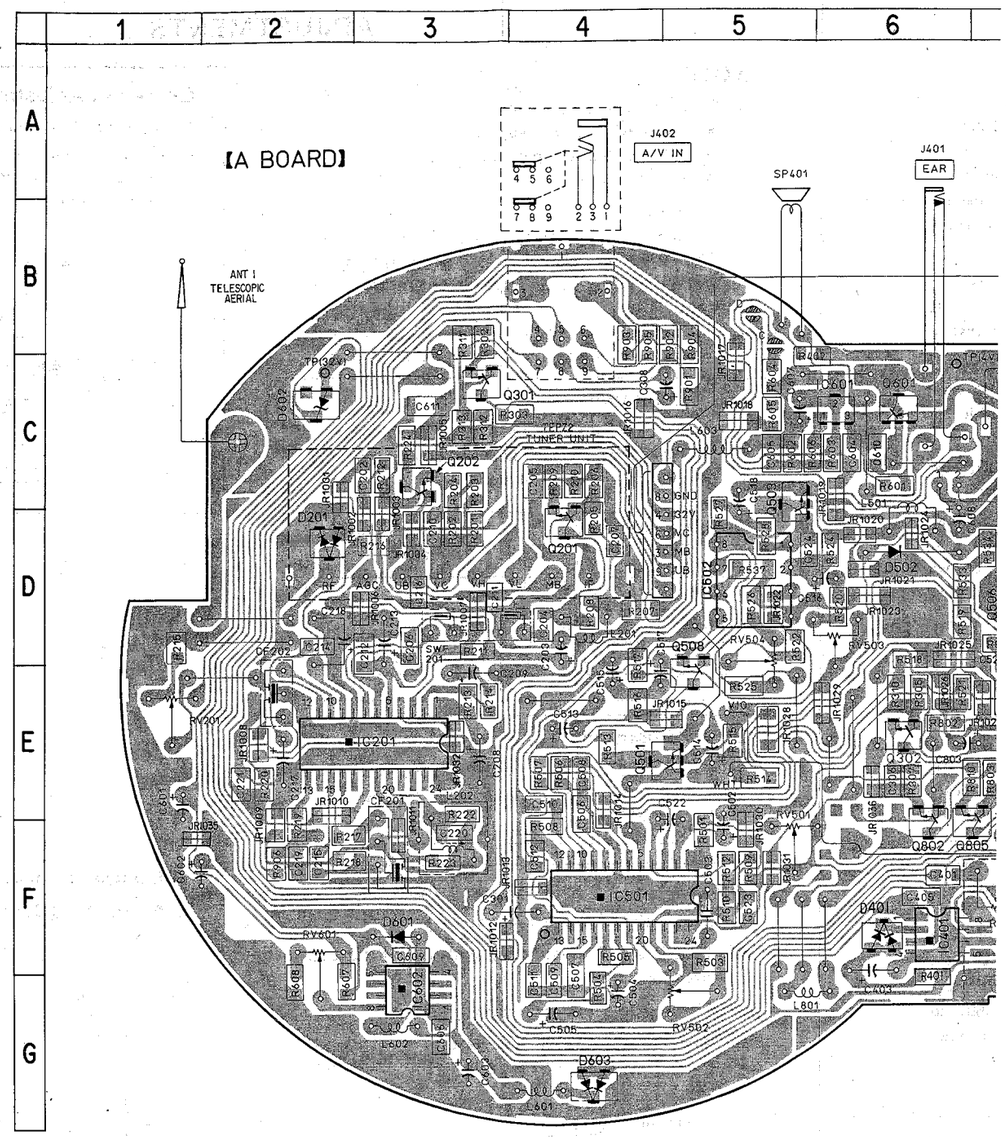
MA152WK



RD5.1M-B2



4-2. PRINTED WIRING BOARDS



• Note on Schem

- All capacitors ar
  50WV or less
  and tantalums.
- All resistors are
  specified.

Note: The comp
line with n
Replace or

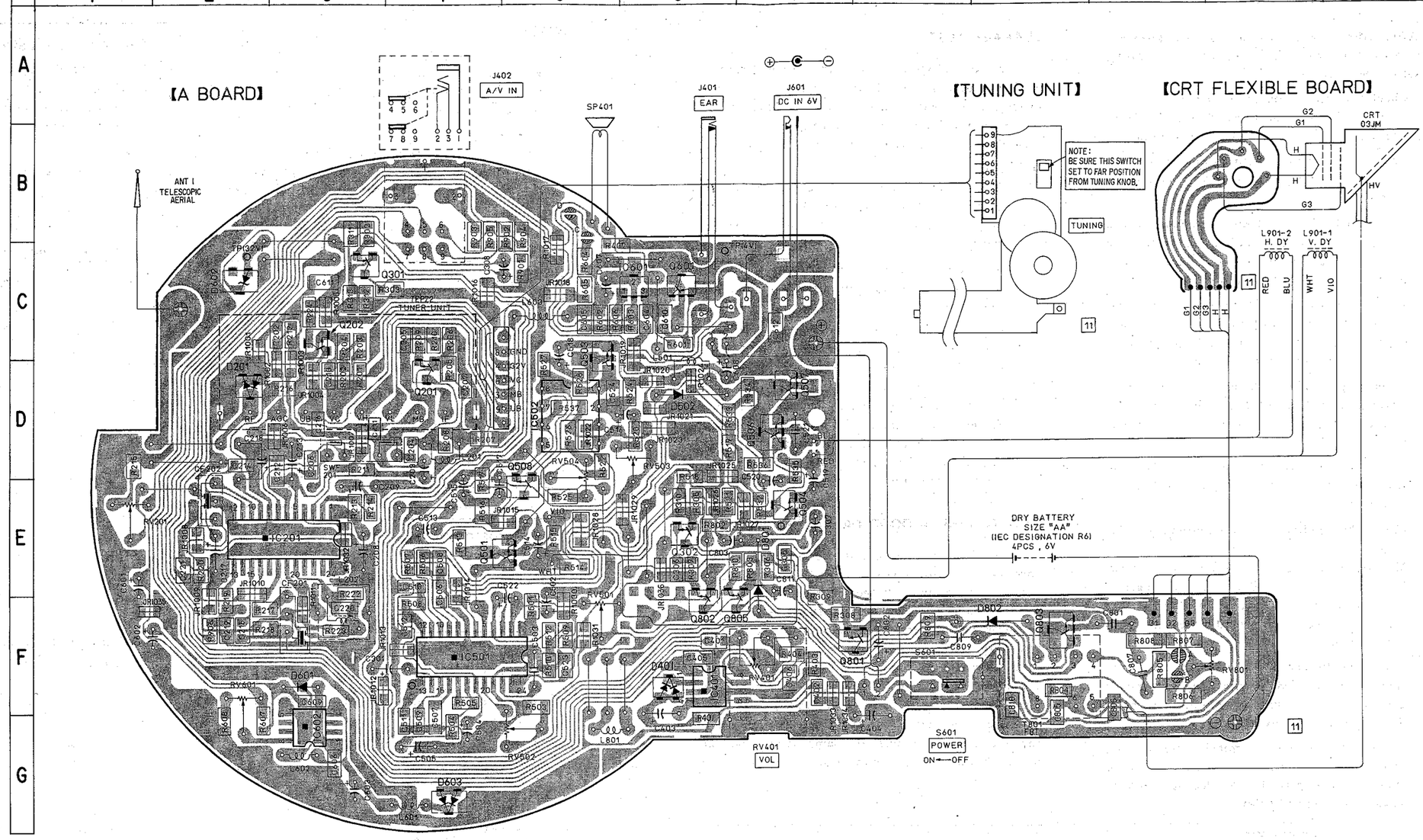
- B+ : B+ Lin
- ▭ : adjustn

• **Semiconductor Location**

Ref. No.	Location
IC201	E-3
IC401	F-6
IC501	F-4
IC502	D-5
IC601	C-6
IC602	G-3
Q201	D-4
Q202	C-3
Q301	C-3
Q302	E-6
Q501	E-5
Q503	D-5
Q504	E-7
Q506	D-7
Q507	D-7
Q508	E-5
Q601	C-6
Q801	F-8
Q802	F-6
Q803	F-9
Q805	F-7
D201	D-2
D401	F-6
D502	D-6
D601	F-3
D602	C-2
D603	G-4
D801	F-7
D802	F-9

inted Wiring Boards

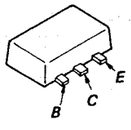
rts extracted from the component side.
rts extracted from the conductor side.



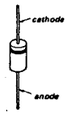
• **Semiconductor Lead Layouts**

2SA1162
2SC1623-L7
2SC2714-Y
2SC3360
DTC114EK
DTC114YK

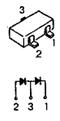
2SB798-DL
2SC3649-S
2SD999-CLCK
2SD1624-T



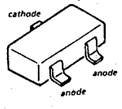
1SS146
1S1585



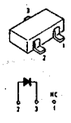
1SS226



MA152WK



RD5.1M-B2



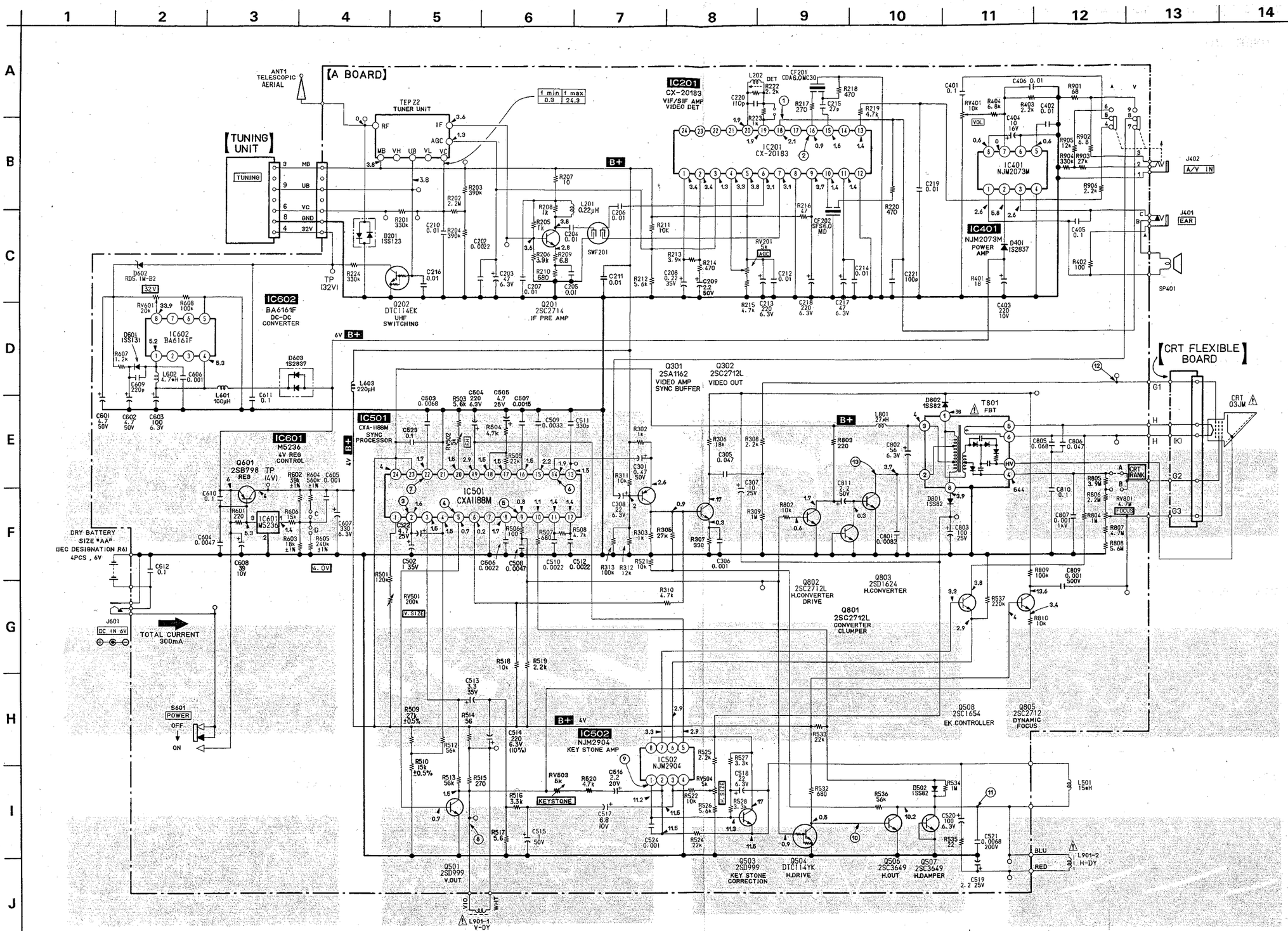
• **Note on Schematic Diagram:**

- All capacitors are in μF unless otherwise noted. pF: $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8W or less unless otherwise specified.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

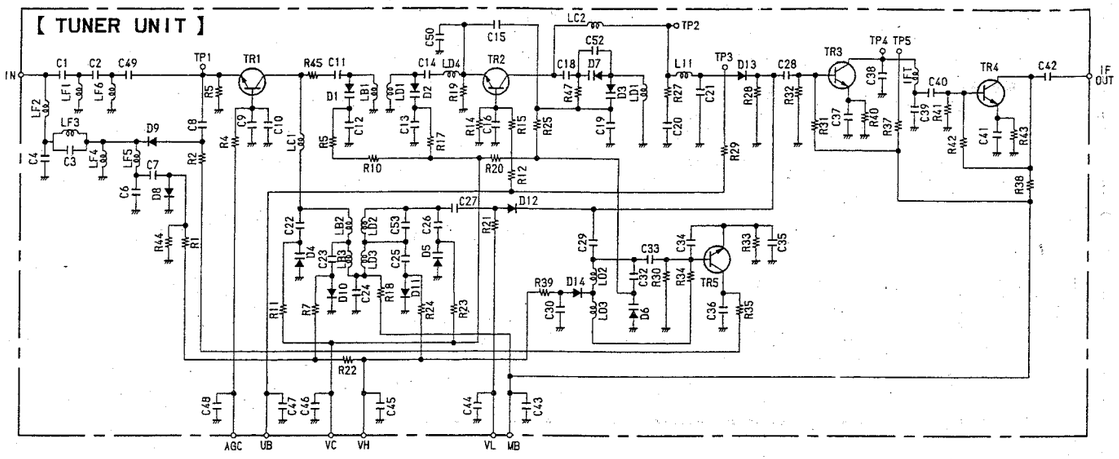
- **B+** : B+ Line
- ▭ : adjustment for repair.

- Power voltage is dc 6V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in VHF chnnel receiveđ conditions.
- Voltages are taken with a VOM (Input impeadance 10MΩ) Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇒ : TV (PICTURE)
  ⇨ : TV (SOUND)

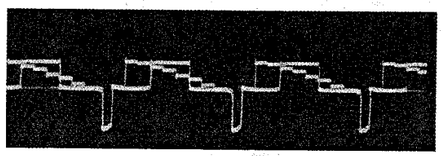
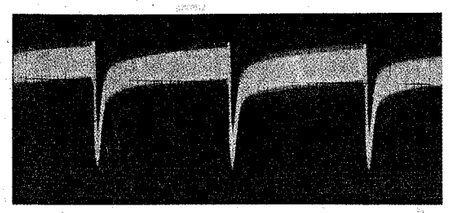
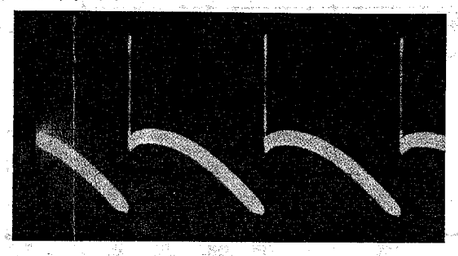
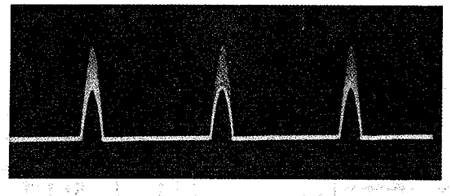
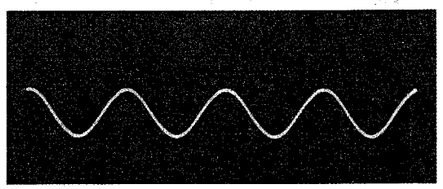
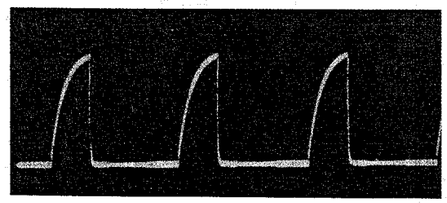
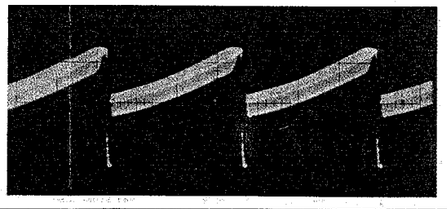
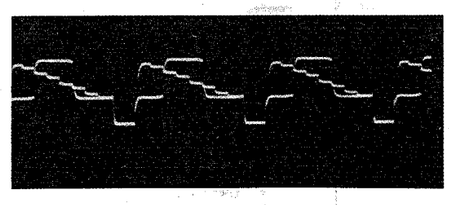
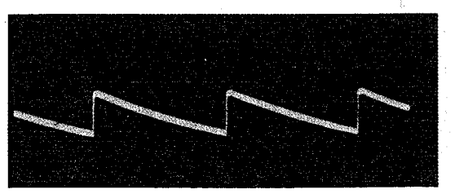
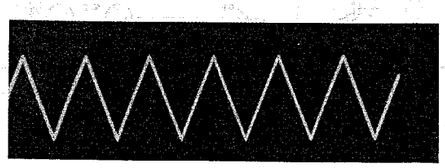
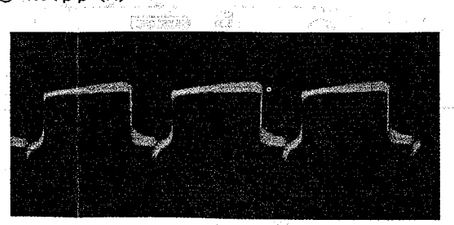
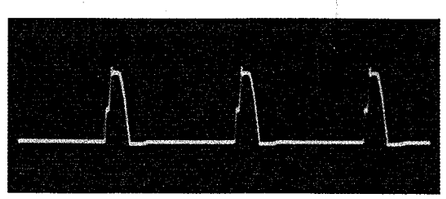

【A BOARD】
【TUNING UNIT】
【CRT FLEXIBLE BOARD】
IC201 CX-20183 VIF/SIF AMP VIDEO DET
IC401 NJM2073M POWER AMP
IC602 BA6161F DC-DC CONVERTER
IC601 M5236 4V REG CONTROL
IC501 CXA1188M SYNC PROCESSOR
IC502 NJM2904 KEY STONE AMP
TEP72 TUNER UNIT
Q202 DTC114EK UHF SWITCHING
Q201 2SC2714 IF PRE AMP
Q301 2SA1162 VIDEO AMP SYNC BUFFER
Q302 2SC2712L VIDEO OUT
Q802 2SC2712L H.CONVERTER DRIVE
Q803 2SD1624 H.CONVERTER
Q801 2SC2712L CONVERTER CLUMPER
Q501 2SD999 V.OUT
Q503 2SD999 KEY STONE CORRECTION
Q504 DTC114YK H.DRIVE
Q506 2SC3649 H.OUT
Q507 2SC3649 H.DAMPER
Q508 2SC1654 EK CONTROLLER
Q805 2SC2712 DYNAMIC FOCUS
T801 FBT
ANT1 TELESCOPIC AERIAL
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 4PCS, 6V
TOTAL CURRENT 300mA
J601 DC IN 6V
S601 POWER OFF ON
J402 A/V IN
J401 EAR
SP401
TP (32V)
TP (4V)
SWF201
CRT 03JM
L901-1 V-DY
L901-2 H-DY
32V
6V B+
4V B+
4.0V

The tuner unit is carefully adjusted at the factory and is supplied as one whole block for replacement.

4-4. TUNER UNIT (TEPZ2) SCHEMATIC DIAGRAM



4-5. WAVEFORMS

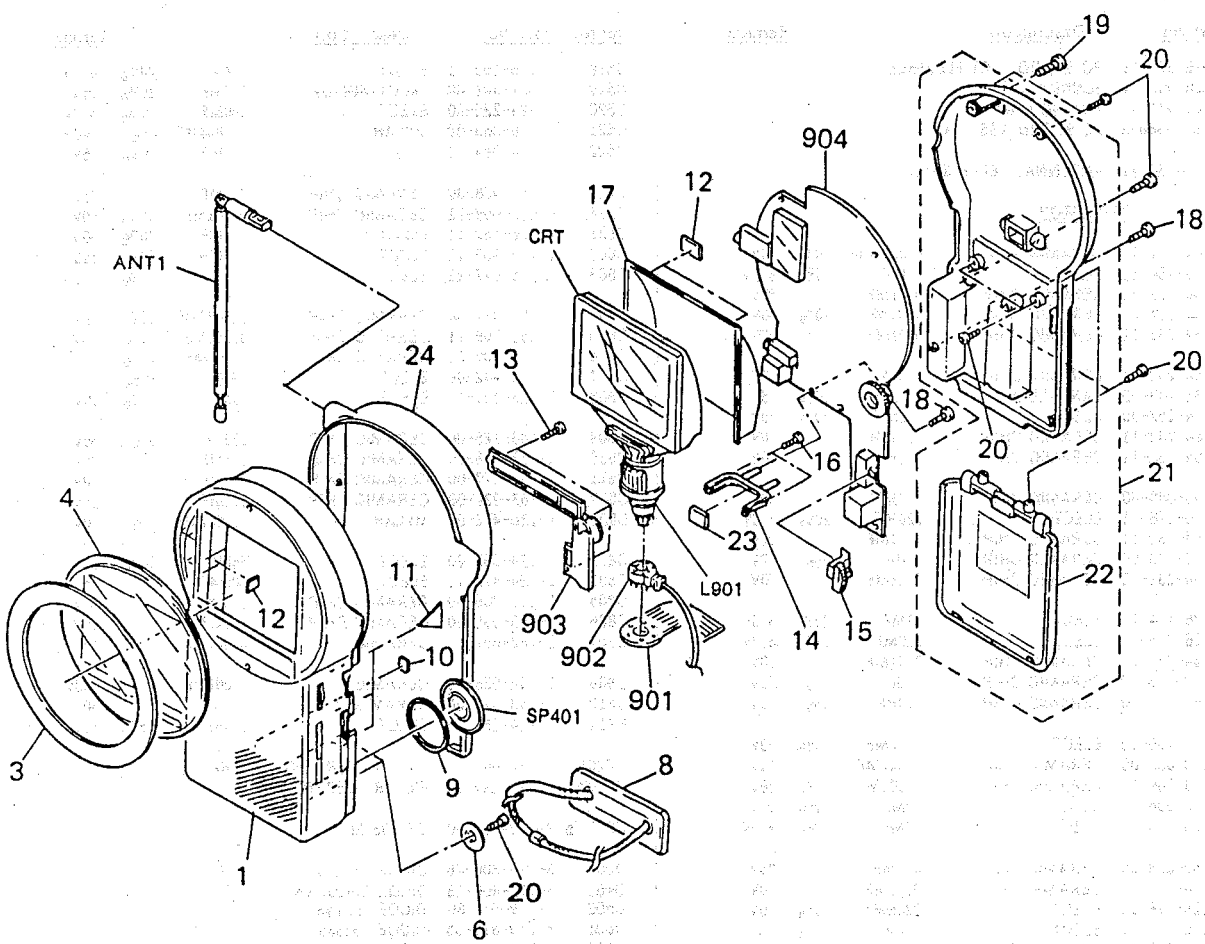
① 0.85Vp-p (H) ⑥ 0.9Vp-p (H) 	④ 1.2Vp-p (V) 	⑧ 4.6Vp-p (V) 	⑪ 120Vp-p (H) 
② 0.2Vp-p 4.5MHz 	⑤ 2.8Vp-p (H) 	⑨ 15Vp-p (V) 	⑫ 30Vp-p (H) 
③ 0.2Vp-p (V) 	⑦ 0.42Vp-p 32 μ sec 	⑩ 1.5Vp-p (H) 	⑬ 30Vp-p (H) 

SECTION 5
EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) ...KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.



Ref.No	Part No.	Description	Remark
1	3-349-342-21	CABINET (FRONT)	
3	3-349-345-11	ORNAMENT, FILTER	
4	3-349-359-01	FILTER	
6	4-303-605-00	NUT	
8	X-3342-717-1	STAND ASSY	
9	3-342-777-01	SHEET, ADHESIVE, SPEAKER	
10	9-911-838-XX	CUSHION	
11	*3-338-931-01	PLATE	
12	9-911-839-XX	RUBER, (B)	
13	3-318-201-51	SCREW (B) (1.4X4), TAPPING	
14	3-342-781-01	BRACKET, CRT	
15	3-342-783-01	KNOB (POWER SW)	
16	3-318-201-61	SCREW (B) (1.4X6), TAPPING	

Ref.No	Part No.	Description	Remark
17	*3-342-713-01	COVER, CRT	
18	3-342-759-21	SCREW (B1.7X8), TAPPING	
19	7-682-148-15	SCREW +P 3X8	
20	7-685-105-19	SCREW (2X8), + PTPWH	
21	A-3041-212-A	CABINET (REAR) SUB ASSY	20,22
22	X-3349-718-1	LID ASSY, BATTERY CASE	
23	9-911-840-XX	CUSHION, LID	
24	3-349-347-11	STRIP, ORNAMENTAL	
901	1-626-675-11	PC BOARD, CRT FLEXIBLE	
902	1-526-992-11	SOCKET, CRT	
903	1-465-015-11	TUNING UNIT	
904	*A-3015-888-A	PC BOARD ASSY, A	
ANT1	1-501-450-21	ANTENNA, TELESCOPIC	
CRT	⚠ 8-733-321-00	CRT-03JM	
L901	⚠ 1-451-328-11	DEFLECTION YOKE	
SP401	1-503-540-11	SPEAKER	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description			Remark
901	1-626-675-11	PC BOARD, CRT FLEXIBLE			
902	1-526-992-11	SOCKET, CRT			
903	1-465-015-11	TUNING UNIT			
904	*A-3015-888-A	PC BOARD ASSY, A			
ANT1	1-501-450-21	ANTENNA, TELESCOPIC			
		CAPACITOR			
C202	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C203	1-126-154-11	ELECT	47MF	20%	6.3V
C204	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C205	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C206	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C207	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C208	1-131-343-00	TANTALUM	0.22MF	10%	35V
C209	1-124-257-00	ELECT	2.2MF	20%	50V
C210	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C211	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C212	1-163-059-00	CERAMIC CHIP	0.01MF		50V
C213	1-126-176-11	ELECT	220MF	20%	6.3V
C214	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C215	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C216	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C217	1-126-154-11	ELECT	47MF	20%	6.3V
C218	1-126-176-11	ELECT	220MF	20%	6.3V
C219	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C220	1-163-118-00	CERAMIC CHIP	110P	5%	50V
C221	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C301	1-124-465-00	ELECT	0.47MF	20%	50V
C305	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C306	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C307	1-126-096-11	ELECT	10MF	20%	25V
C308	1-126-153-11	ELECT	22MF	20%	6.3V
C401	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C402	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C403	1-126-176-11	ELECT	220MF	20%	10V
C404	1-126-157-11	ELECT	10MF	20%	16V
C405	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C406	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C502	1-131-347-11	TANTALUM	1MF	10%	35V
C503	1-130-481-00	MYLAR	0.0068MF	5%	50V
C504	1-124-635-00	ELECT	220MF	20%	6.3V
C505	1-126-094-11	ELECT	4.7MF	20%	25V
C506	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C507	1-163-209-00	CERAMIC CHIP	0.0015MF	5%	50V
C508	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C509	1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V
C510	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C511	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C512	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C513	1-126-162-11	ELECT	3.3MF	20%	35V
C514	1-126-355-11	ELECT	220MF	10%	6.3V
C515	1-126-160-11	ELECT	1MF	20%	50V
C516	1-131-361-00	TANTALUM	2.2MF	10%	20V
C517	1-124-239-00	ELECT	6.8MF	20%	10V
C518	1-126-153-11	ELECT	22MF	20%	6.3V
C519	1-127-508-00	ELECT (SOLID)	2.2MF	20%	25V
C520	1-124-225-00	ELECT	100MF	20%	6.3V
C521	1-106-363-00	MYLAR	0.0068MF	5%	200V
C522	1-126-094-11	ELECT	4.7MF	20%	25V
C523	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C524	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C601	1-126-163-11	ELECT	4.7MF	20%	50V
C602	1-126-163-11	ELECT	4.7MF	20%	50V
C603	1-126-177-11	ELECT	100MF	20%	6.3V
C604	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C605	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C606	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C607	1-124-442-00	ELECT	330MF	20%	6.3V
C608	1-126-121-11	ELECT	39MF	20%	10V
C609	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C610	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C611	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C612	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C801	1-130-482-00	MYLAR	0.0082MF	5%	50V
C802	1-124-565-00	ELECT	56MF	20%	6.3V
C803	1-124-478-11	ELECT	100MF	20%	25V
C805	1-163-036-00	CERAMIC CHIP	0.068MF		50V
C806	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C807	1-162-697-11	CERAMIC	0.001MF		1KV
C809	1-102-038-00	CERAMIC	0.001MF		500V
C810	1-163-077-00	CERAMIC CHIP	0.1MF		50V
C811	1-124-257-00	ELECT	2.2MF	20%	50V
CF201	1-567-662-11	FILTER, CERAMIC (6.0MHz)			
CF202	1-567-661-11	FILTER, CERAMIC			
CRT ⚠	8-733-321-00	CRT 03JM			
D201	8-719-800-76	DIODE 1SS226			
D401	8-719-400-18	DIODE MA152WK			
D502	8-719-970-80	DIODE 1SS146			
D601	8-719-815-85	DIODE 1S1585			
D602	8-719-105-82	DIODE RD5.1M-B2			
D603	8-719-400-18	DIODE MA152WK			
D801	8-719-970-80	DIODE 1SS146			
D802	8-719-970-80	DIODE 1SS146			
IC201	1-808-518-11	IC M51348AFP-72C			
IC401	8-759-701-02	IC NJM2073M			
IC501	8-752-031-99	IC CXA1188M			
IC502	8-759-700-42	IC NJM2904D			
IC601	8-759-630-27	IC M5236ML			
IC602	8-759-945-44	IC BA6161F			
J401	1-565-457-11	JACK (EAR)			
J402	1-568-821-11	JACK (A/V IN)			
J601	1-562-961-11	JACK (DC IN 6V)			
JR1001	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1002	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1003	1-216-295-00	METAL GLAZE	0	5%	1/10W

Ref.No	Part No.	Description			Remark
JR1004	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1005	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1006	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1007	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1008	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1009	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1010	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1011	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1012	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1013	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1014	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1015	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1016	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1017	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1018	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1019	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1020	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1021	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1022	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1023	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1024	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1025	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1026	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1027	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1028	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1029	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR1030	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1031	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1032	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1033	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1034	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1035	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR1036	1-216-295-00	METAL GLAZE	0	5%	1/10W
L201	1-410-312-11	INDUCTOR	0.22UH		
L202	1-404-808-11	TRANSFORMER, IF (VIF DETECTOR)			
L501	1-410-777-11	INDUCTOR	15MMH		
L601	1-410-645-31	INDUCTOR	100UH		
L602	1-410-771-11	INDUCTOR	4.7MMH		
L603	1-410-525-11	INDUCTOR	220UH		
L801	1-410-668-11	INDUCTOR	27UH		
L901	⚠ 1-451-328-11	DEFLECTION YOKE			
Q201	8-729-200-87	TRANSISTOR 2SC2714-Y			
Q202	8-729-900-53	TRANSISTOR DTC114EK			
Q301	8-729-216-22	TRANSISTOR 2SA1162			
Q302	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q501	8-729-140-75	TRANSISTOR 2SD999-CLCK			
Q503	8-729-140-75	TRANSISTOR 2SD999-CLCK			
Q504	8-729-900-52	TRANSISTOR DTC114YK			
Q506	8-729-808-56	TRANSISTOR 2SC3649-S			
Q507	8-729-808-56	TRANSISTOR 2SC3649-S			
Q508	8-729-105-37	TRANSISTOR 2SC3360			
Q601	8-729-101-07	TRANSISTOR 2SB798-DL			
Q801	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q802	8-729-100-67	TRANSISTOR 2SC1623-L7			
Q803	8-729-808-42	TRANSISTOR 2SD1624-T			
Q805	8-729-100-67	TRANSISTOR 2SC1623-L7			

RESISTOR

R201	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R202	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W
R203	1-216-111-00	METAL GLAZE	390K	5%	1/10W
R204	1-216-111-00	METAL GLAZE	390K	5%	1/10W
R205	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R206	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R207	1-216-150-00	METAL GLAZE	10	5%	1/8W
R208	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R209	1-216-311-00	METAL GLAZE	6.8	5%	1/10W
R210	1-216-045-00	METAL GLAZE	680	5%	1/10W
R211	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R212	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R213	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R214	1-216-041-00	METAL GLAZE	470	5%	1/10W
R215	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R216	1-216-166-00	METAL GLAZE	47	5%	1/8W
R217	1-216-035-00	METAL GLAZE	270	5%	1/10W
R218	1-216-041-00	METAL GLAZE	470	5%	1/10W
R219	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R220	1-216-041-00	METAL GLAZE	470	5%	1/10W
R222	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R223	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R224	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R302	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R303	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R305	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R306	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R307	1-216-037-00	METAL GLAZE	330	5%	1/10W
R308	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R309	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R310	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R311	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R312	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R313	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R401	1-216-007-00	METAL GLAZE	18	5%	1/10W
R402	1-216-025-00	METAL GLAZE	100	5%	1/10W
R403	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R404	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R501	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R503	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R504	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R505	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R506	1-216-025-00	METAL GLAZE	100	5%	1/10W
R507	1-216-045-00	METAL GLAZE	680	5%	1/10W
R508	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R509	1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R510	1-216-679-11	METAL CHIP	15K	0.50%	1/10W
R512	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R513	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R514	1-216-019-00	METAL GLAZE	56	5%	1/10W
R515	1-216-035-00	METAL GLAZE	270	5%	1/10W
R516	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R517	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R518	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R519	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R520	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R521	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R522	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R524	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R525	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R526	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R527	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R528	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R532	1-216-045-00	METAL GLAZE	680	5%	1/10W
R533	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R534	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R535	1-216-009-00	METAL GLAZE	22	5%	1/10W
R536	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R537	1-216-254-00	METAL GLAZE	220K	5%	1/8W
R601	1-216-033-00	METAL GLAZE	220	5%	1/10W
R602	1-216-748-11	METAL GLAZE	39K	1%	1/10W
R603	1-216-339-11	METAL GLAZE	18K	1%	1/10W
R604	1-216-740-11	METAL GLAZE	560K	1%	1/10W
R605	1-216-776-11	METAL GLAZE	240K	1%	1/10W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description				Remark
R606	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R607	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R608	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R802	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R803	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R804	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R805	1-216-284-00	METAL GLAZE	3.9M	5%	1/8W	
R806	1-216-278-00	METAL GLAZE	2.2M	5%	1/8W	
R807	1-216-286-00	METAL GLAZE	4.7M	5%	1/8W	
R808	1-216-288-11	METAL GLAZE	5.6M	5%	1/8W	
R809	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R810	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R901	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R902	1-216-311-00	METAL GLAZE	6.8	5%	1/10W	
R903	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R904	1-216-109-00	METAL GLAZE	330K	5%	1/10W	
R905	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R906	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
RV201	1-228-993-00	RES, ADJ, CARBON 5K				
RV401	1-238-162-11	RES, VAR, CARBON (VOL)				
RV501	1-228-998-00	RES, ADJ, CARBON 200K				
RV502	1-228-993-00	RES, ADJ, CARBON 5K				
RV503	1-228-993-00	RES, ADJ, CARBON 5K				
RV504	1-228-993-00	RES, ADJ, CARBON 5K				
RV601	1-228-995-00	RES, ADJ, CARBON 20K				
RV801	1-230-954-11	RES, ADJ (HIGH VOLTAGE) 4.7M				
S601	1-571-478-11	SWITCH, SLIDE (POWER)				
SP401	1-503-540-11	SPEAKER				
SWF201	1-577-558-11	FILTER, CERAMIC				
T801	⚠1-439-433-11	TRANSFORMER ASSY, FLYBACK				
TEPZ2	1-465-013-21	TUNER UNIT				

Ref.No	Part No.	Description	Remark
		ACCESSORIES AND PACKING MATERIALS	
	3-750-805-41	MANUAL, INSTRUCTION	
*	3-349-349-01	CUSHION	
*	3-349-356-01	INDIVIDUAL CARTON	
*	4-920-407-01	BAG, PROTECTION	

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Replace only with part number specified.

9-955-679-11

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